SPECIFIC IMMUNOLOGICAL & BIOCHEMICAL MARKERS IN ORAL CARCINOGENESIS

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Abstract: Worldwide, oral carcinoma is one of the most prevalent cancers and is one of the 10 most common causes of death. If oral cancers and cancers of nasopharynx, pharynx, larynx, sinus and salivary glands are combined, these sites represent more than 5% of total body cancers. Approximately 95% of oral squamous cell carcinoma (OSCC) occurs in people older than 40 years. However OSCC at a young age has attracted attention in the literature. The overall age related incidence of OSCC suggests that time dependent factors result in the initiation and promotion of genetic events that result in malignant change. Oral pre-cancer (oral submucous fibrosis and leukoplakia) have a high malignant potential are spreading like an epidemic in India and South-East Asia especially in the younger population. The incidence of oral cancer is age related, which may reflect time for the accumulation of genetic changes and duration of exposure to initiators and promoters. These include chemical and physical irritants, viruses, hormonal effects, cellular ageing and decreased immunological surveillance with ageing. Most studies have focused on cigarette use; however other forms of tobacco use have been associated with oral cancers. The use of smokeless tobacco products (chewing tobacco and snuff) is of increasing concern due to the increase in the use and due to their use at a young age. The incidence of OSCC varies worldwide and may be explained partly by differences in the use of tobacco products. In parts of Asia where the use of tobacco, betel nuts or lime to form a quid is widespread, the incidence of oral cancer is high and more commonly involves the buccal mucosa. Increasing awareness on part of the providers of treatment, as well as the population in general, has led to a large proportion of patients presenting with earlier stage of the disease. Based on the fact that oral mucosal lesions are easily detected clinically, oral premalignant lesions have been accepted as a largest tissue for preventing malignant transformations. Epidemiological studies indicate that intervention at an early stage might reduce oral carcinoma related deaths. The discovery of immunological markers at a clinical, histological and molecular level has marked the end of an era of groping in the dark for clues to the basis of cancer. Significant reduction in mortality can be achieved my advances in early diagnosis and implementation of multidisciplinary treatment programs leading to improvement of survivorship and better quality of life. The development of oral cancer is a multistep process arising from pre-existing potentially malignant lesions. Leukoplakia is the most common precancer representing 85% of such lesions. Histologically, over 95% of oral cancers are squamous cell carcinomas. It has been suggested that a vast majority of oral squamous cell carcinomas in India arise from pre-existing Leukoplakia. Likewise, the incidence of oral submucous fibrosis (OSMF) is increasing like an epidemic, targeting the younger generation. The etiology for OSMF is still obscure and a varied number of factors have been proposed. Of these, areca nut use is the most important and persistent finding in history taking. In the present study levels of circulating immune complexes, trace elements (copper, iron and selenium) in serum of patients with oral submucous fibrosis (OSMF), oral leukoplakia (L), and oral squamous cell carcinoma (SCC), were analyzed and the best predictors amongst these parameters for disease occurrence and progression were identified. Evaluation of serum molybdenum and zinc was also undertaken. Carcinogenesis is a genetic process that leads to a change in morphology and in cellular behavior. The assessment of molecular change may become the primary means of diagnosis and may guide management. The present study shows that these immunological and biological markers may be associated with the pathogenesis of oral premalignant and malignant lesions and their progression. Concerted efforts would, therefore, help in early detection, management, and monitoring the efficacy of treatment. An attempt has also been made to analyze the environmental and public health aspect.